

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-086698

(43)Date of publication of application : 30.03.1999

(51)Int.Cl.

H01H 35/00

(21)Application number : 09-246882

(71)Applicant : J R HIGASHI NIPPON MECHATRONICS KK
NIPPON SIGNAL CO LTD:THE

(22)Date of filing : 11.09.1997

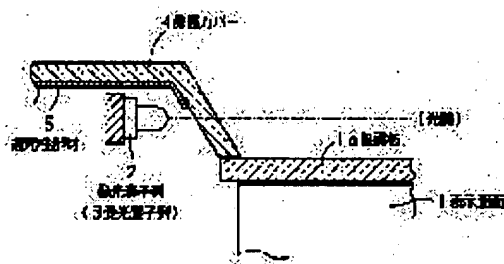
(72)Inventor : SAIJO MASARU
IMAI TATSUFUKI

(54) OPTICAL TOUCH PANEL

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent the effects of a disturbance light by providing a light- shielding member on the inside upper surface of a translucent protecting cover for covering a light-emitting element line and a light-receiving element line.

SOLUTION: The adhesion of dust to a light-emitting element line 2 and a light-receiving element line 3 and the touch thereto by the finger of a user are prevented by a protecting cover 4. A light-shielding member 5 is stuck to the ceiling inside part of the protecting cover 4, and the sidewall inside upper part thereof with not shield the optical axis between the light-emitting element line 2 and the light-receiving element line 3. As the light-shielding member 5, any material which does not transmit light may be used, and for example, a thin iron plate or synthetic resin plate may be adapted. A prescribed content such as an account button group for designating a ticket is displayed on a display screen 1, and when a user designates it by the finger, the light beams of the x-axial and y-axial optical axes corresponding to the finger are shielded, and a prescribed information corresponding to the designation by the finger can be inputted, without being affected by a disturbance light. It is also capable of coping with existing optical touch panels.



LEGAL STATUS

[Date of request for examination] 09.04.2004

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

Page 1

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] Horizontal [surrounding] and the surrounding optical touch panel characterized by perpendicularly preparing a protection-from-light nature member for said luminescence element array and said light-receiving element array on the inside top face of the protective cover of wrap translucency in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered of the display screen.

[Claim 2] Horizontal [surrounding] and the surrounding optical touch panel characterized by perpendicularly preparing a protection-from-light nature member for said luminescence element array and said light-receiving element array on the outside top face of the protective cover of wrap translucency in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered of the display screen.

[Claim 3] Horizontal [surrounding] and the surrounding optical touch panel characterized by having constituted said luminescence element array and said light-receiving element array among the protective covers of wrap translucency, and constituting a top face from a protection-from-light nature member in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered perpendicularly of the display screen.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the optical touch panel used for ATM, an automatic ticket vending machine, etc., and relates to the optical touch panel which can prevent disturbance light effectively especially.

[0002]

[Description of the Prior Art] Conventionally, the luminescence element array 2 and the light-receiving element array 3 counter the surrounding horizontal direction (henceforth "the direction of a x axis") and surrounding perpendicular direction (henceforth "y shaft orientations") of guard-plate 1a which consists of transparence material prepared in the top face of the display screen 1 which displays account **** etc., and this kind of optical touch panel is prepared in them, respectively, as shown in drawing 4. In addition, in this drawing 4, although only the luminescence element array 2 is shown, the light-receiving element array 3 is formed in the location which countered with this luminescence element array 2. Moreover, when the luminescence element array 2 is formed in the location of the light-receiving element array 3, the light-receiving element array 3 is formed in the location of the luminescence element array 2.

[0003] While maintaining and carrying out a large number arrangement and constituting [spacing / predetermined] these luminescence element array 2 and the light-receiving element array 3, respectively in the light emitting device and photo detector which consist of an infrared-emitting diode etc., these luminescence element array 2 and the light-receiving element array 3 are covered with the protective cover 4 formed by the translucency material which consists of synthetic resin etc. Therefore, an optical touch panel can input predetermined information by of which light emitting device of the direction of a x axis, and y shaft orientations the beam of light was shaded with a user's finger.

[0004]

[Problem(s) to be Solved by the Invention] However, when the above-mentioned conventional optical touch panel was used in the installation where disturbance light, such as sunrays and a lamp, is irradiated, it had the fault to which the input of a photo detector becomes excessive and detection of a touch becomes impossible.

[0005] When it was not able to install in the perfect interior of a room like an automatic ticket vending machine especially, the rate of being influenced of disturbance light might be unable to purchase the ticket which it is large, therefore is wished to have.

[0006] Then, it is made in order that this invention may solve the above-mentioned fault, and the object is in offering the optical touch panel which can prevent the effect of disturbance light.

[0007]

[Means for Solving the Problem] The optical touch panel concerning this invention is characterized by horizontal and surrounding preparing [of the display screen] a protection-from-light nature member perpendicularly for said luminescence element array and said light-receiving element array on the inside top face of the protective cover of wrap translucency in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered, in order to attain the above-mentioned object.

[0008] The optical touch panel concerning this invention is characterized by horizontal and surrounding preparing [of the display screen] a protection-from-light nature member perpendicularly for said luminescence element array and said light-receiving element array on the outside top face of the protective cover of wrap translucency in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered, in order to attain the above-mentioned object.

[0009] The optical touch panel concerning this invention is characterized by horizontal and surrounding having constituted said luminescence element array and said light-receiving element array among the protective covers of wrap translucency, and constituting [of the display screen] a top face from a protection-from-light nature member in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered perpendicularly, in order to attain the above-mentioned object.

[0010]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on a drawing. Drawing 1 is some sectional views of the optical touch panel concerning the gestalt of 1 operation. In addition, the same sign is attached and explained to the same component as the conventional example of above-mentioned drawing 4.

[0011] The luminescence element array 2 and the light-receiving element array 3 counter the surrounding direction of a x axis and y shaft orientations of guard-plate 1a which consists of transparent glass formed so that the screen of the display screen 1 may be covered, and it is prepared, respectively. In addition, in this drawing 1, although only the luminescence element array 2 is shown, the light-receiving element array 3 is formed in the location which countered with this luminescence element array 2. Moreover, when the luminescence element array 2 is formed in the location of the light-receiving element array 3, the light-receiving element array 3 is formed in the location of the luminescence element array 2.

[0012] While maintaining and carrying out a large number arrangement and constituting [spacing / predetermined] these luminescence element array 2 and the light-receiving element array 3, respectively in the light emitting device and photo detector which consist of an infrared-emitting diode etc., these luminescence element array 2 and the light-receiving element array 3 are covered with the protective cover 4 formed by the translucency material which consists of synthetic resin etc.

[0013] Therefore, an optical touch panel can prevent that a light emitting device or a photo detector is described by a user's finger while being able to prevent that dust adheres to the luminescence element array 2 and the light-receiving element array 3 with a protective cover 4.

[0014] Among drawing 1, five are a protection-from-light nature member, and are stuck on the side-attachment-wall inside upper part which does not shade the optical axis between the head-lining inside part of a protective cover 4 and the luminescence element array 2, and the light-receiving element array 3 (refer to the alternate long and short dash line of drawing 1), i.e., the inside top face of a protective cover 4. If this protection-from-light nature member 5 is construction material which does not let a beam of light pass, it can be adopted, for example, a thin griddle and a synthetic-resin plate can be used for it.

[0015] In the optical touch panel of the above-mentioned configuration, if the predetermined contents, such as account **** which specifies a ticket as the display screen 1, are displayed and a user specifies the predetermined location of the display with a finger, the beam of light of the optical axis corresponding to the location of the finger of the direction of a x axis and y shaft orientations will be shaded, and the predetermined information corresponding to assignment of the finger will be inputted.

[0016] Moreover, since the protection-from-light nature member 5 is formed in the head-lining inside part and side-attachment-wall inside part of a protective cover 4 of the above-mentioned configuration, disturbance light can be shaded effectively and the incorrect input by disturbance light can be prevented effectively. [of an optical touch panel] According to the experiment of this invention persons, improving pair disturbance light reinforcement is checked by forming a protective cover 4.

[0017] Drawing 2 shows the optical touch panel concerning the gestalt of other operations of this invention, and he is trying to prepare protection-from-light nature member 5' in the head-lining outside of a protective cover 4, and the side-attachment-wall outside upper part, i.e., the outside top face of a protective cover.

[0018] Thus, if protection-from-light nature member 5' is made external, it can attach also in an established optical touch panel easily.

[0019] Drawing 3 shows the optical touch panel of this invention further applied to the gestalt of other operations, and constitutes the head-lining part (top face) from a protection-from-light nature member among protective cover 4'. Moreover, the side-attachment-wall part along which an optical axis passes consists of side-attachment-wall 4a of the same translucency member as usual, and filler 4b which consists of translucency material filled up with a hollow so that dust may not collect.

[0020] Thus, if some protective covers are constituted from protection-from-light nature material, the effectiveness which does not need to prepare a protection-from-light nature member separately will be acquired as mentioned above.

[0021] [Effect of the Invention] Since the optical touch panel concerning this invention prepared the protection-from-light nature member for the luminescence element array and the light-receiving element array in the inside top face of the protective cover of wrap translucency, it can shade disturbance light and can raise pair disturbance light reinforcement.

[0022] Since the optical touch panel concerning this invention prepared the protection-from-light nature member for the luminescence element array and the light-receiving element array in the outside top face of the protective cover of wrap translucency, it can shade disturbance light and can raise pair disturbance light reinforcement. Moreover, an established optical touch panel can also be coped with easily.

[0023] Without preparing a protection-from-light nature member separately, since the luminescence element array and the light-receiving element array were constituted among the protective covers of wrap translucency and it constituted the top face from a protection-from-light nature member, the optical touch panel concerning this invention can shade disturbance light, and can raise pair disturbance light reinforcement.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the optical touch panel used for ATM, an automatic ticket vending machine, etc., and relates to the optical touch panel which can prevent disturbance light effectively especially.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art] Conventionally, the luminescence element array 2 and the light-receiving element array 3 counter the surrounding horizontal direction (henceforth "the direction of a x axis") and surrounding perpendicular direction (henceforth "y shaft orientations") of guard-plate 1a which consists of transparency material prepared in the top face of the display screen 1 which displays account **** etc., and this kind of optical touch panel is prepared in them, respectively, as shown in drawing 4. In addition, in this drawing 4, although only the luminescence element array 2 is shown, the light-receiving element array 3 is formed in the location which countered with this luminescence element array 2. Moreover, when the luminescence element array 2 is formed in the location of the light-receiving element array 3, the light-receiving element array 3 is formed in the location of the luminescence element array 2.

[0003] While maintaining and carrying out a large number arrangement and constituting [spacing / predetermined] these luminescence element array 2 and the light-receiving element array 3, respectively in the light emitting device and photo detector which consist of an infrared-emitting diode etc., these luminescence element array 2 and the light-receiving element array 3 are covered with the protective cover 4 formed by the translucency material which consists of synthetic resin etc. Therefore, an optical touch panel can input predetermined information by of which light emitting device of the direction of a x axis, and y shaft orientations the beam of light was shaded with a user's finger.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] Since the optical touch panel concerning this invention prepared the protection-from-light nature member for the luminescence element array and the light-receiving element array in the inside top face of the protective cover of wrap translucency, it can shade disturbance light and can raise pair disturbance light reinforcement.

[0022] Since the optical touch panel concerning this invention prepared the protection-from-light nature member for the luminescence element array and the light-receiving element array in the outside top face of the protective cover of wrap translucency, it can shade disturbance light and can raise pair disturbance light reinforcement. Moreover, an established optical touch panel can also be coped with easily.

[0023] Without preparing a protection-from-light nature member separately, since the luminescence element array and the light-receiving element array were constituted among the protective covers of wrap translucency and it constituted the top face from a protection-from-light nature member, the optical touch panel concerning this invention can shade disturbance light, and can raise pair disturbance light reinforcement.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, when the above-mentioned conventional optical touch panel was used in the installation where disturbance light, such as sunrays and a lamp, is irradiated, it had the fault to which the input of a photo detector becomes excessive and detection of a touch becomes impossible.

[0005] When it was not able to install in the perfect interior of a room like an automatic ticket vending machine especially, the rate of being influenced of disturbance light might be unable to purchase the ticket which it is large, therefore is wished to have.

[0006] Then, it is made in order that this invention may solve the above-mentioned fault, and the object is in offering the optical touch panel which can prevent the effect of disturbance light.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] The optical touch panel concerning this invention is characterized by horizontal and surrounding preparing [of the display screen] a protection-from-light nature member perpendicularly for said luminescence element array and said light-receiving element array on the inside top face of the protective cover of wrap translucency in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered, in order to attain the above-mentioned object.

[0008] The optical touch panel concerning this invention is characterized by horizontal and surrounding preparing [of the display screen] a protection-from-light nature member perpendicularly for said luminescence element array and said light-receiving element array on the outside top face of the protective cover of wrap translucency in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered, in order to attain the above-mentioned object.

[0009] The optical touch panel concerning this invention is characterized by horizontal and surrounding having constituted said luminescence element array and said light-receiving element array among the protective covers of wrap translucency, and constituting [of the display screen] a top face from a protection-from-light nature member in the optical touch panel which prepares, respectively and becomes so that a luminescence element array and a light-receiving element array may be countered perpendicularly, in order to attain the above-mentioned object.

[0010]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on a drawing. Drawing 1 is some sectional views of the optical touch panel concerning the gestalt of 1 operation. In addition, the same sign is attached and explained to the same component as the conventional example of above-mentioned drawing 4.

[0011] The luminescence element array 2 and the light-receiving element array 3 counter the surrounding direction of a x axis and y shaft orientations of guard-plate 1a which consists of transparent glass formed so that the screen of the display screen 1 may be covered, and it is prepared, respectively. In addition, in this drawing 1, although only the luminescence element array 2 is shown, the light-receiving element array 3 is formed in the location which countered with this luminescence element array 2. Moreover, when the luminescence element array 2 is formed in the location of the light-receiving element array 3, the light-receiving element array 3 is formed in the location of the luminescence element array 2.

[0012] While maintaining and carrying out a large number arrangement and constituting [spacing / predetermined] these luminescence element array 2 and the light-receiving element array 3, respectively in the light emitting device and photo detector which consist of an infrared-emitting diode etc., these luminescence element array 2 and the light-receiving element array 3 are covered with the protective cover 4 formed by the translucency material which consists of synthetic resin etc.

[0013] Therefore, an optical touch panel can prevent that a light emitting device or a photo detector is described by a user's finger while being able to prevent that dust adheres to the luminescence element array 2 and the light-receiving element array 3 with a protective cover 4.

[0014] Among drawing 1, five are a protection-from-light nature member, and are stuck on the side-attachment-wall inside upper part which does not shade the optical axis between the head-lining inside part of a protective cover 4 and the luminescence element array 2, and the light-receiving element array 3 (refer to the alternate long and short dash line of drawing 1), i.e., the inside top face of a protective cover 4. If this protection-from-light nature member 5 is construction material which does not let a beam of light pass, it can be adopted, for example, a thin griddle and a synthetic-resin plate can be used for it.

[0015] In the optical touch panel of the above-mentioned configuration, if the predetermined contents, such as account **** which specifies a ticket as the display screen 1, are displayed and a user specifies the predetermined location of the display with a finger, the beam of light of the optical axis corresponding to the location of the finger of the direction of a x axis and y shaft orientations will be shaded, and the predetermined information corresponding to assignment of the finger will be inputted.

[0016] Moreover, since the protection-from-light nature member 5 is formed in the head-lining inside part and side-attachment-wall inside part of a protective cover 4 of the above-mentioned configuration, disturbance light can be shaded effectively and the incorrect input by disturbance light can be prevented effectively. [of an optical touch panel] According to the experiment of this invention persons, improving pair disturbance light reinforcement is checked by forming a protective cover 4.

[0017] Drawing 2 shows the optical touch panel concerning the gestalt of other operations of this invention, and he is trying to prepare protection-from-light nature member 5' in the head-lining outside of a protective cover 4, and the side-attachment-wall outside upper part, i.e., the outside top face of a protective cover.

[0018] Thus, if protection-from-light nature member 5' is made external, it can attach also in an established optical touch panel easily.

[0019] Drawing 3 shows the optical touch panel of this invention further applied to the gestalt of other operations, and constitutes the head-lining part (top face) from a protection-from-light nature member among protective cover 4'. Moreover, the side-attachment-wall part along which an optical axis passes consists of side-attachment-wall 4a of the same translucency member as usual, and filler 4b which consists of translucency material filled up with a hollow so that dust may not collect.

[0020] Thus, if some protective covers are constituted from protection-from-light nature material, the effectiveness which does not need to prepare a protection-from-light nature member separately will be acquired as mentioned above.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] They are some sectional views of the optical touch panel concerning the gestalt of 1 operation of this invention.

[Drawing 2] They are some sectional views of the optical touch panel concerning the gestalt of other operations of this invention.

[Drawing 3] They are some sectional views of the optical touch panel of this invention further applied to the gestalt of other operations.

[Drawing 4] They are some sectional views of the conventional optical touch panel.

[Description of Notations]

1 Display Screen

1a Guard plate

2 Issuance Element Array

3 Light-receiving Element Array

4 4' Protective cover

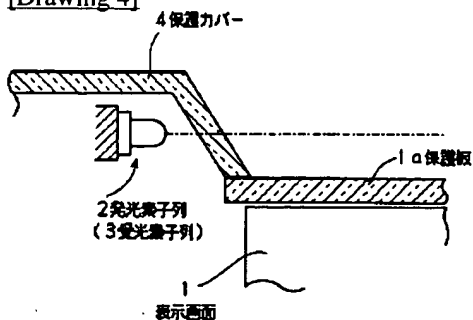
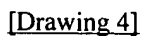
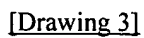
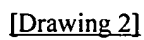
5 5' Protection-from-light nature member

[Translation done.]

JPO and NCIPI are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

[Drawing 1]



[Translation done.]

Page-15